

IP Project Activity Update

May 2021

Purpose: Update on ongoing technical planning studies and project implementation activities for the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan)

Fish Passage Element

Cle Elum Dam Fish Passage Facilities and Reintroduction Project

The juvenile fish passage facility will use an innovative helix design to transport juvenile fish downstream. It will allow fish to leave the reservoir as the water surface fluctuates over the top 63 feet in elevation. This will provide downstream passage from April 1 through the beginning of June in most years. The upstream adult fish passage facility will be a trap-and-haul facility where fish are trapped at the base of the spillway, loaded into a truck, and then hauled for release into Cle Elum Reservoir or to upstream tributaries.

Construction Update: The access road and spillway bridge construction contract is complete. The secant vault construction is complete. Construction for the tunnel contract is complete as of March 2021.

Reclamation anticipates close-out of the contract by the end of the year. Please note that the last downstream section of the tunnel will be constructed as part of the Adult Collection Facility contract; this will be the last construction contract needed to complete the Cle Elum Dam Fish Passage project.

The Intake, Gate, and Helix (IGH) contractor mobilized in late April 2019. Construction of Intake #6, the lowest elevation intake within the reservoir, was completed in December 2019 and Intake #5, was partially completed in December 2020. Trenching and shoring work, needed for the placement of precast concrete boxes that will run between the intake gates (reservoir) and the secant vault, were installed in 2019. The contractor re-mobilized on-site in July 2020 and prepared the trench for precast concrete box placement. The first box, one of 194 boxes, was placed in September 2020. These boxes form the conduit or tunnel that will connect the reservoir intakes to the secant vault. Conduit levels 6, 5, 4, 3 and 2, the bottom 5 levels, have been placed and sealed in concrete except for the last few conduit boxes for each level. These final boxes will be placed following the penetration of the secant vault later in 2021. The IGH contractor has completed the secant vault foundation and is currently working on the helix/gate chamber separation wall and the access structure walls which will contain the structures elevators and stairs. Subcontractors continue fabricating and constructing steelwork, gates, and helical flume sections for installation beginning summer 2021. Video: <https://vimeo.com/508632343>

Sockeye Study Update: In 2018, Reclamation and the Yakama Nation worked with the U.S. Geological Survey to conduct an adult sockeye tracking test to understand their migration between Roza and Cle Elum dams. The study found that 20 of the 20 tagged fish migrated successfully to the base of Cle Elum Dam. In 2019, these same partners, along with Washington Department of Fish and Wildlife (WDFW), began a sockeye tracking study in the lower Yakima River. The study reach runs from the mouth of the Yakima River up to the Roza Dam and is evaluating potential passage issues at diversion dams, possible false attraction, microclimate use, and Columbia River Stranding. We expect to conduct this study over three years depending on the study findings.

Results from the first year of the study (2019) found very low migration success rates for tagged Sockeye primarily due to high river temperatures. The 2020 Summer sockeye study began at the end of



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June by tagging fish captured at Prosser Dam and in the Columbia River near Bateman Island. USGS completed gathering tracking data in September 2020 and have been analyzing the data and writing a draft report. Preliminary findings continue to show that high river temperatures limit access upstream for much of the summer, Sockeye migration can be slowed down at diversion dams, and false attraction and predation may also be impacting upstream migration. The final report for 2020's study is currently being peer reviewed and will be released May 2021. We are currently preparing for the summer 2021 Sockeye study.

Box Canyon Creek Fish Passage

WDFW, with input from Reclamation, Ecology, and other passage restoration experts, has completed a conceptual design for the Box Canyon Creek Fish Passage Enhancement Project. Reclamation has contracted with HDR to prepare a 60% design. The project partners have met to establish performance goals for 60% design. A site-visit with project partners and stakeholders was held October 1, 2020. Additional survey work was needed for the 60% design. Reclamation completed this survey May 1, 2021 with the assistance of USFWS. Reclamation anticipates 60% design to be completed in July 2021.

Clear Creek Dam Fish Passage

Reclamation and Ecology completed an appraisal level design for fish passage in September 2018. The design consists of a traditional pool-and-weir-style fishway with a steel bulkhead at the upstream end that will draw cool water from deeper in the reservoir. Situated along the left abutment of the dam, fish would enter the fishway in the stilling basin and exit in the reservoir pool. The bulkhead will be deep enough to maintain suitable water temperature in the fishway for Bull Trout.

Reclamation is coordinating with Ecology, U.S. Fish and Wildlife Service (USFWS), Yakama Nation, WDFW, USFS and others to complete the final ladder design. The partners met with basin biologists to define the range of species targeted for passage and provide input for designers regarding ladder geometry. Reclamation conducted geotechnical investigations in October 2020 and completed 30% designs on November 2, 2020. Comments from the Yakima Dams Fish Passage Core Team were reviewed on January 21, 2021 and have been sent to the technical workgroup for review and comment. A Value Engineering Study was completed the week of February 8, 2021. Reclamation anticipates 60% design in June 2021.

Until passage improvements are accomplished, USFWS, Reclamation, USFS, and WDFW will continue capturing Bull Trout from below Clear Creek Dam and transporting genetically identified North Fork Tieton River fish around the dam so they can reach spawning habitat in the North Fork Tieton River. Fish capture and transport has been conducted 2016 through 2020. To date, 75 adult Bull Trout have been transported above the dam.

Structural and Operational Changes Element

Cle Elum Pool Raise

The purpose of the Cle Elum Pool Raise Project is to increase the Cle Elum reservoir's capacity for improved aquatic resources for fish habitat, rearing, and migration in the Cle Elum and upper Yakima River, thereby fulfilling the intent of the congressional authorization, Title XII of Public Law 103-434.

Completed: Radial Gate construction was completed in April 2017. Reclamation completed modifications to three saddle dikes as of 2018. The USFS Cle Elum River Campground recreation area was completed in November 2017. The USFS Speelyi Day Use Area recreation area was completed in May 2019.

Construction Update: Reclamation and Ecology are currently implementing shoreline protection actions for private and public lands and facilities. Construction of shoreline protection at Wish Poosh Campground began in April 2021 and will be completed by the end of May 2022. The Sandelin Lane shoreline protection area contract is expected to be awarded in 2021. Remaining shoreline protection will be implemented as funding is available. Landowners and the public will be updated periodically on the project via mail and website postings during project implementation. Reclamation and Ecology continue working with landowners along the shoreline to acquire easements as appropriate for the project and recently released a video to educate our partners and public on the project. Video: <https://youtu.be/9G3-CqBMQsE>.

In addition, Reclamation and Ecology also sent out quarterly update post card to landowners to continue outreach among the landowners around Cle Elum Reservoir.

Chandler Pumping Plant Electrification

Kennewick Irrigation District (KID) continues to evaluate an electrical pumping plant at Chandler. As of May 2021, Reclamation continues to work with KID. KID is preparing updated design drawings and operational diversion plans for review of Chandler Electrical Pumping Plant by Reclamation. Reclamation has extended an existing Memorandum of Agreement through 2022 with KID for this work. Reclamation and KID have regular meetings to address KID water supply issues. Reclamation is part of the Lower River Leadership team along with Ecology, Yakama Nation, and KID to discuss a multitude of options to meet lower river flow needs for KID. An electrical pumping plant may still be considered by KID, however, recently KID has been reviewing other options which may include an onsite storage reservoir.

Lower Yakima River Smolt Survival Study

The survival of juvenile salmon (smolts) migrating to the ocean can influence the abundance of returning adults and the availability of fish for harvest years later. Smolt survival is affected by passage at dams, predators, and environmental conditions such as river flow and water quality. Factors affecting smolt survival are being identified by the Lower Yakima River Smolt Survival Study with the goal of developing recommendations for improvement projects. The study area includes the mainstem Yakima River from the City of Yakima to the Columbia River confluence. Project funding comes from Yakama Nation (YN), Reclamation, irrigation districts, Ecology, and the US Geological Survey (USGS), with YN and USGS leading the field work and data analysis. During each year of the study (2018–2022) about 1,000 juvenile salmon and steelhead are collected, tagged, and released in the Yakima River to monitor their behavior and survival as they migrated downstream. Monitoring stations are set up at major diversion dams and key river reaches. Data on predator populations such as pelicans and bass, river flows, and water temperatures are also being collected so they can be related to fish survival.

Preliminary results over three years indicated smolt survival was highest in early spring and lowest in June when the Yakima River warmed, flows declined, and predator abundance was high. In 2020 the study focused on evaluating survival at Wapato, Sunnyside, and Prosser dams. Survival was lower than expected for fish that were inadvertently diverted into canals. Significantly, no smolts were found downstream of the fish screens, indicating survival was affected by other factors in the canals which are still being evaluated.

In response to the study findings, the Sunnyside Division Board of Control (SBD OC) initiated a project to install a (1) fish and debris guidance boom and (2) sluice gate modification at Sunnyside Dam. The project is intended to reduce the numbers of fish diverted into Sunnyside canal without affecting irrigation. The guidance boom was manufactured by Pacific Netting Products and installed by SVID in

March 2021. The floating guidance boom was made from HDPE pipe and marine-grade hardware which suspends a 4-foot deep stainless-steel fish screen below the water surface. The guidance boom is being tested in 2021 for effectiveness at higher river flows. The sluice gate modification will be installed in the summer of 2021. It is intended to give fish a low-flow passage route at the dam and will be tested in 2022. The results from the Lower River Smolt Survival Study will help determine future actions to improve fish survival at diversion dams while still meeting irrigation needs.

Surface Water Storage Element

Kachess Drought Relief Pumping Plant (KDRPP)

The KDRPP is proposed to access 200,000 (out of 585,000) acre-feet of inactive storage in the Kachess Reservoir that is below the current outlet works for use in severe drought.

On April 26, 2019, Reclamation signed the *Record of Decision* (ROD), which does not approve implementation of any alternatives but carries forward Alternative 4 - KDRPP Floating Pumping Plant (FPP) for further analysis. Consistent with this decision, the remaining alternatives in the FEIS, including the Kachess to Keechelus Conveyance, are unlikely to be carried forward. Reclamation and Ecology will use a phased approach for further site-specific analysis in a Tier 2 NEPA process to narrow the range of feasible alternatives for KDRPP.

The Project Proponent, the Roza Irrigation District, in coordination with Reclamation and Ecology, is currently developing a new Proposed Action and clarifying the FPP alternative for the KDRPP Tier 2 NEPA process. This final and complete Proposed Action and Reclamation's subsequent Notice of Intent (NOI) for the Tier 2 EIS are currently projected for 2021. Roza and possibly other pro-ratable waters users (KRD, Wapato Irrigation Project (WIP) and KID) would fund, design, construct, and operate the KDRPP.

Wymer Reservoir

Consideration of site requirements is ongoing.

Bumping Reservoir Enlargement Project

Consideration of site requirements is ongoing.

Groundwater Storage Element

Groundwater Storage – Basin-wide Analysis

In March 2021, the Groundwater Subcommittee provided the YRBWEP Workgroup with a presentation of Groundwater Storage Subcommittee activities during the last biennium. The Subcommittee continues progress on 2019-2021 biennium projects. These projects are:

- Field Assessment of High-Priority Managed Aquifer Recharge (MAR) Sites in the Upper Yakima Basin, Kittitas Reclamation District,
- Strategies for Groundwater Storage in Diverse Settings of the Yakima Basin: Headwater Tributaries and Lower Basin Irrigation Districts, Central Washington University, and
- Low Head Check Structures, Yakama Nation.

Selah-Moxee Irrigation District completed the Yakima River Groundwater Infiltration Study in the service area. The study reported relatively high groundwater levels, low infiltration rates and relatively slow

groundwater flow rates in the shallow aquifer system due to the wide-spread presence of fine-grained sediments, making large scale shallow aquifer recharge unlikely in this location.

The Groundwater Storage Subcommittee formed a knowledge gap subgroup to discuss technical aspects of shallow aquifer recharge, aquifer storage and recovery, and floodplain storage, and to help identify future efforts in the Yakima Basin. The subgroup will continue to make recommendations to the Subcommittee concerning the investigation of sites in the basin and provide technical guidance towards new projects.

Aquifer Storage and Recovery (ASR)

The City of Yakima is planning full build-out for its permitted ASR program and intends to drill two ASR-devoted wells: the first well is estimated for 2022-2023, and the second is estimated for 2025-2026.

Habitat Protection and Enhancement Element

Targeted Watershed Protection and Enhancement

The Watershed Lands Conservation Subcommittee is finalizing a new 10-year lands plan (the Phase 2 Plan). The plan describes the Subcommittee's focus elements – acquisitions, designations, and forest health and management - for continued implementation of the Targeted Watershed Protection and Enhancement component of the Habitat Element of the Integrated Plan. The Subcommittee plans to discuss the plan with the Workgroup at its June Quarterly Meeting.

Mainstem Floodplain and Tributaries Fish Habitat Enhancement Program

The Habitat Subcommittee has developed its 2021-2023 biennial budget proposal to Ecology for the Habitat Element. Additionally, the Subcommittee has allocated the remainder of its contingency funds from the 2019-2021 biennium to projects in that same biennium that experienced cost overruns.

The Subcommittee has focused the next biennial budget formulation on lower river priority actions related to high juvenile salmon and steelhead mortality as well as lower river temperature barriers to adult salmon migration. The Subcommittee recognizes the criticality of resolving lower river passage issues if upper-watershed habitat protection and enhancement projects are to be successful in the long-term.

The Habitat Subcommittee is closely monitoring the SBDOC fish boom and sluice gate project. The project is a key milestone for lower river habitat enhancements, and the Habitat Subcommittee is interested in how implementation of the project will affect smolt outmigration season in 2021. The Habitat Subcommittee will use the data gathered from the study in 2021 to further refine its lower river strategy.

Enhanced Water Conservation Element

Upon passage of the Dingell Act in March 2019, the Reclamation, Ecology, Yakama Nation and YRBWEP Workgroup Partners have a goal to conserve 85,000 acre-feet of water by 2029. The overall conservation savings goal upon full Integrated Plan implementation is 170,000 acre-feet. Reclamation and Ecology are conducting an inventory of water conservation accomplishments associated with the Integrated Plan. Projects that count towards this goal must adhere to three parameters:

- Begin in 2013 or later
- Be an agricultural or municipal improvement project resulting in conserved water, and

- Not be part of the Title XII, Section 1203 Basin Conservation Plan

To date, there have been 104 conservation projects implemented. Approximately \$89 million invested has resulted in approximately 50,000 acre-feet conserved (\$1,800 per acre-foot). A technical memorandum explaining the history, accounting, and future framework planning for the Enhanced Water Conservation element projects was released to the Water Use Subcommittee in April 2020. Within this memorandum, Reclamation and Ecology have developed a project prioritization proposal for achieving the remaining portion of the initial development phase goal.

Among the work within the basin in 2020, the Yakama Nation and WIP made notable steps forward on their water conservation projects. This progress includes continuing to develop specifications and contract documents for the construction of 10 long crested weir check/grade control structure on the Satus 3 Pump Canal, canal lining within Satus Unit 2, replacement of leaking concrete pipeline, and the piping of laterals. The work completed in 2020 was estimated to conserve approximately 6,808 ac-ft.

Additionally, the Yakama Nation and WIP requested \$1.76M to acquire the right-of-way and to construct a 120 ac-ft regulating reservoir in the Unit 2 West Branch Canal. This reservoir will stabilize and provide operational flexibility to the overall delivery system. It will allow WIP to enclose the remaining laterals on the Unit 2 West and East canals. The reservoir is projected to save 7,700 ac-ft.

Market Reallocation Element

The Kittitas Reclamation District (KRD) and Trout Unlimited (TU) continued work on a water market project as part of the Market Reallocation element of YBIP. The project is identifying potential limitations and evaluating their impacts on market-based water transfers in the Yakima Basin. A key component of this project is the research and development of a Yakima Basin-specific Smart Market framework—a tool to increase transfer efficiency by automating steps in the process where possible. Over the last quarter, project partners and contractors advanced the analysis market-based transfer activity through data gathering and preliminary review of past Yakima Basin water transfers (approx. 2005 – 2020). The past activity analysis will help guide market simulations to evaluate potential future activity. Additionally, the project team advanced an agreement framework (i.e. terms of use) for stakeholders to use a Smart Market. The team also addressed questions irrigation districts face when an opportunity to move water arises. Finally, the project held a virtual Technical Work Group meeting in later January. The meeting was an opportunity for the team to provide analytical updates and gather feedback from key stakeholders.

More information about the project can be found at <https://www.yakimabasinwatermarketing.org/>

Proposed Projects for Consideration

During implementation of the Integrated Plan, an adaptive approach will be used periodically to assess progress towards meeting the identified instream flow objectives, the 70 percent proratable supply goal for irrigation, and goals for other out-of-stream needs. The need for additional water supply enhancements would depend on the effectiveness of projects that are implemented as part of the Integrated Plan, how the Yakima basin economy develops over time, and the timing of and manner in which climate changes affect water supply availability. From time-to-time, new projects may be identified (and proposed) for consideration under the Integrated Plan. Reclamation, Ecology, Yakama Nation, and the Executive Committee have developed a formalized process to consider new projects. Projects proposed for evaluation and those currently being evaluated are listed here:

- Tieton River Restoration, including proposed North Fork Cowiche Creek Reservoir, and
- Upper Yakima System Storage

Contacts for Information on the Integrated Plan:

Wendy Christensen, U.S. Department of the Interior, Bureau of Reclamation, Columbia-Cascades Area Office, (509) 573-8050

Thomas Tebb, Washington State Department of Ecology, Office of Columbia River, (509) 574-3989

Project website: <http://www.usbr.gov/pn/programs/yrbwep/index.html>